UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,166	10/22/2003	Christopher D. Koch	1034-004US01	6530

28863 7590 04/02/2007	EXAMINER
SHUMAKER & SIEFFERT, P. A. 1625 RADIO DRIVE SUITE 300 WOODBURY, MN 55125	NGUYEN, QUANG N

ART UNIT	PAPER NUMBER
2141	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>22 October 2003</u>.

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-56</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>1-56</u> is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>22 October 2003</u> is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some *   c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>See Continuation Sheet</u>.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :20040120, 20050428, 20050531 and 20051031.

Detailed Action

1.   This Office Action is responsive to the Application SN 10/691,166 filed on 10/22/2003. Claims 1-56 are presented for examination.

Information Disclosure Statement

2.   The information disclosure statement (IDS) submitted on 01/20/2004, 04/28/2005, 05/31/2005 and 10/31/2005 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

Claim Rejections - 35 USC § 101

3.   35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4.   **Claims 1-56 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.**

5.   Claim 1, reciting *"A method, comprising: detecting a disablement of a passive optical network; storing address association information indicating association of*

network addresses with network clients upon detecting the disablement; and

associating the network addresses and the network clients based on the stored address

association information upon recovery from the disablement", appears to be non-

statutory because the claim is not limited to a practical application which produces a

useful, tangible, and concrete result.

For such subject matter to be statutory, the claimed process must be limited to a practical

application of the abstract idea or mathematical algorithm in the technological arts. See *Alappat*, 33 F.3d

at 1543, 31 USPQ2d at 1556-57 (quoting *Diamond v. Diehr*, 450 U.S. at 192, 209 USPQ at 10). See also

Alappat 33 F.3d at 1569, 31 USPQ2d at 1578-79 (Newman, J., concurring) ("unpatentability of the

principle does not defeat patentability of its practical applications") (citing *O'Reilly v. Morse*, 56 U.S. (15

How.) at 114-19). A claim is limited to a practical application when the method, as claimed, produces a

concrete, tangible and useful result; i.e., the method recites a step or act of producing something that is

concrete, tangible and useful. See *AT&T*, 172 F.3d at 1358, 50 USPQ2d at 1452.

6.   Claim 1 is also rejected under 35 U.S.C. 112, first paragraph. Specifically, since

the claimed invention is not supported by either a specific and substantial asserted

utility or a well established utility for the reasons set forth above, one skilled in the art

clearly would not know how to use the claimed invention.

7.   Claims 20, 21, 28, 29, 36, 37 and 43 contain similar limitations as claim 1;

therefore, they are rejected under the same rationale.

8.   Claims 2-19, 22-27, 30-35, 38-42 and 44-56 are dependent claims of claims 1,

21, 29, 37 and 43, consequently, they are rejected under the same rationale, at least by

virtue of their dependency from the independent claims.

Claim Rejections - 35 USC § 103

9.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

10.   Claims 1-2 and 10 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Blahut et al. (US 6,065,061), hereinafter "Blahut", in view of

Banerjee et al. (US 2002/0143968 A1), hereinafter "Banerjee".

11.   As to claim 1, **Blahut** teaches a method comprising:

detecting a disablement of a passive optical network *(in step 305, CMTS 120*

detects a service interruption with respect to the downstream cable link to CM 115)

(Blahut, col. 5, lines 6-10);

storing address association information indicating association of network

addresses with network clients upon detecting the disablement *(CMTS 120 stores the*

network information of CM in a routing table) **(Blahut, Table 1 and col. 5, lines 23-38).**

However, **Blahut** does not explicitly teach associating the network addresses and the network clients based on the stored address association information upon recovery from the disablement.

In an analogous art, **Banerjee** teaches a method for protecting against a premature reassignment of an IP address by Service Provider server 64 after an interruption in the connection with the initial client 57 by maintaining an IP address log in database 65 which records the DNS names of all client stations that have currently been assigned IP addresses by server 64 and if the original IP address has not been reassigned to a new client then the IP address is available for reassignment to the original client 57 upon recovery from the interruption *(i.e., associating the network addresses and the network clients based on the stored address association information upon recovery from the disablement)* **(Banerjee, paragraph [0025])**.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the feature of reassigning the stored original IP address to the original client upon recovery from the interruption/disablement, as disclosed by **Banerjee**, into the teachings of **Blahut**. One would be motivated to do so to allow the system to delay the reassignment of IP addresses for periods sufficient to eliminate the late arrival of query responses to reassigned IP addresses to avoid confusing to new clients who has got said reassigned said IP addresses and to protect against a premature reassignment of an IP address by a Service Provider server after an interruption/disablement in the connection with a client **(Banerjee, paragraphs [0006] and [0008])**.

12.   As to claim 2, **Blahut-Banerjee** teaches the method of claim 1, wherein associating the network addresses and the network clients includes retrieving the stored address association information; and verifying whether the associations indicated by the address association information are valid **(Banerjee, paragraphs [0026-0027])**.

13.   As to claim 10, **Blahut-Banerjee** teaches the method of claim 2, further comprising canceling one of the address associations upon detecting that one of the clients has released the respective network address *(i.e., a table entry for a particular CM is removed upon receipt of a termination message from the CM)* **(Blahut, col. 6, lines 11-18)**.

14.   **Claims 3-9, 11-13 and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blahut-Banerjee, and further in view of Sawada et al. (US 2002/0016858 A1), hereinafter "Sawada".**

15.   As to claim 3, **Blahut-Banerjee** teaches the method of claim 2, but does not explicitly teach sending Address Resolution Protocol (ARP) queries for the network addresses indicated by the address association information and maintaining the address associations upon receiving ARP responses.

In an analogous art, **Sawada** teaches a communication apparatus for routing or discarding a packet sent from a user terminal, wherein the packet communications apparatus A 2801 sends an ARP Request packet periodically to make sure that the user

terminal 2806 remains connected to the network *(i.e., sending Address Resolution Protocol (ARP) queries for the network addresses indicated by the address association information)*. If the user terminal 2806 is connected to the network, an ARP Reply packet in response to the ARP Request packet is sent back from the user terminal to confirm that the user terminal 2806 remains connected to the network, thus, keeps the MAC address and IP address of the user terminal 2806 and the valid time registered on one entry line in the learned address table 2811 *(i.e., maintaining the address associations upon receiving ARP responses)* **(Sawada, paragraphs [0265-0266])**.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the feature of sending Address Resolution Protocol (ARP) queries for the network addresses indicated by the address association information and maintaining the address associations upon receiving ARP responses, as disclosed by **Sawada**, into the teachings of **Blahut-Banerjee**. One would be motivated to do so to allow the system to confirm or to make sure that a user terminal has been disconnected from the network when the updated valid time becomes zero seconds or minus before removing/deleting table entries for an IP endpoint to limit the size of the routing table **(Sawada, paragraphs [0264-0266])**.

16.   As to claim 4, **Blahut-Banerjee-Sawada** teaches the method of claim 3, wherein the association information includes a remaining lease time, the method further comprising sending the ARP queries periodically for the remaining lease time for each of the address associations *(i.e., the ARP Request packet is sent two times at the*

intervals of 30 seconds if the updated valid time falls within 60 seconds) **(Sawada, paragraphs [0264-0266])**.

17.   As to claim 5, **Blahut-Banerjee-Sawada** teaches the method of claim 4, further comprising ceasing the sending of the ARP queries for one of the network addresses upon detecting a change in the address association information for the respective network address *(i.e., deleting the entry line from the learned address table if the updated valid time is zero seconds or minus)* **(Sawada, paragraphs [0264-0266])**.

18.   As to claim 6, **Blahut-Banerjee-Sawada** teaches the method of claim 3, further comprising canceling the address association for one of the network addresses when an ARP response is not received for the respective network address within a predetermined period of time *(i.e., unless the packet communications apparatus A 2801 receives the reply to the ARP Request packet, it regards the user terminal 2806 as having been disconnected from the network and deletes the entry line from the learned address table)* **(Sawada, paragraphs [0264-0266])**.

19.   As to claim 7, **Blahut-Banerjee-Sawada** teaches the method of claim 3, further comprising sending the ARP query to a network client associated with the network address *(i.e., the packet communications apparatus A 2801 sends an ARP Request packet periodically to make sure that the user terminal 2806 remains connected to the network)* **(Sawada, paragraphs [0264-0266])**.

20.   As to claim 8, **Blahut-Banerjee-Sawada** teaches the method of claim 2, further

comprising modifying the address association information upon detecting a lease of one

of the network addresses **(Sawada, paragraphs [0256-0257] and [0268-0269])**.

21.   As to claim 9, **Blahut-Banerjee-Sawada** teaches the method of claim 2, further

comprising modifying the address association information upon detecting a renewal of

one of the network addresses *(i.e., due to the match between the IP address registered*

in the learned address table and the source IP address of the renewal packet, updates

the valid time entry to 300 seconds) **(Sawada, paragraphs [0268-0269])**.

22.   As to claims 11-13, **Blahut-Banerjee-Sawada** teaches the method of claim 1,

further comprising tracking a length of time of the network disablement and updating

remaining lease times by subtracting the length of time of the network disablement from

the remaining lease times *(i.e., "30 seconds" equaling intervals at which the update*

process is activated is subtracted from the remaining time (valid/lease time) held in the

valid period field on the entry lines in the learned address table) **(Sawada, paragraphs**

[0264-0266]).

23.   As to claim 15, **Blahut-Banerjee-Sawada** teaches the method of claim 1,

wherein detecting a network disablement includes sending periodic messages to

communicate the sate of the passive optical network *(i.e., the packet communications*

apparatus A 2801 sends an ARP Request packet periodically to make sure that the user terminal 2806 remains connected to the network) **(Sawada, paragraphs [0264-0266])**; and concluding that a network disablement has occurred when a response to the periodic messages is not received with a predetermined period of time *(i.e., unless the packet communications apparatus A 2801 receives the reply to the ARP Request packet, it regards the user terminal 2806 as having been disconnected from the network and deletes the entry line from the learned address table)* **(Sawada, paragraphs [0264-0266])**.

24.   As to claim 16, **Blahut-Banerjee-Sawada** teaches the method of claim 1, wherein the address information includes a network address and a remaining lease time **(Sawada, Figs. 35-37)**.

25.   ‚ As to claim 17, **Blahut-Banerjee-Sawada** teaches the method of claim 1, wherein storing network address association information includes storing the network address association information in non-volatile memory *(it's well-known in the art that the ARP cache/table is stored in non-volatile memory)*.

26.   As to claim 18, **Blahut-Banerjee-Sawada** teaches the method of claim 1, wherein the network addresses include Internet Protocol (IP) addresses **(Sawada, Figs. 35-37)**.

27.   As to claim 19, **Blahut-Banerjee-Sawada** teaches the method of claim 1, further

comprising leasing the network addresses to clients for a specified duration of time *(i.e.,*

lease time of 300 seconds, 3600 seconds) **(Sawada, Figs. 35-37).**

28.   **Claims 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over**

Blahut-Banerjee-Sawada, and further in view of Hirai (US 6,324,577).

29.   As to claim 14, **Blahut-Banerjee-Sawada** teaches the method of claim 12, but

does not explicitly teach canceling one of the associations when the remaining lease

time for the respective association is shorter than the length of time of the network

disablement.

In an analogous art, **Hirai** teaches a network management system for managing

various states of nodes to which IP addresses are dynamically assigned, wherein if it is

determined that a node 12 of the abnormal or stopped state is present in the nodes 12

of the management database 23a, elapsed time TR is calculated *(i.e., the length of time*

of the network disablement is calculated). If the thus calculated elapse time TR

exceeds time (T/2) which is half the lease period (assignment time) T when an IP

address is assigned to each node 12 by the DHCP server 13b, the assigned IP address

corresponding to the node 12 of the abnormal or stopped state 12 is deleted *(i.e.,*

canceling one of the associations when the remaining lease time for the respective

association is, shorter than the length of time of the network disablement) **(Hirai, col. 13,**

line 52 – col. 14, line 4).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the feature of canceling one of the associations when the remaining lease time for the respective association is shorter than the length of time of the network disablement, as disclosed by **Hirai**, into the teachings of **Blahut-Banerjee-Sawada**. One would be motivated to do so to allow the system to detect a change of related information of the name and IP address of each node, i.e., to update management information for each node on the network.

30.   Claims 20-56 recite corresponding method, computer readable medium, network and device claims that contain similar limitations as method claims 1-19; therefore, they are rejected under the same rationale.

Conclusion

31.   Further references of interest are cited on Form PTO-892, which is an attachment to this Office Action.

32.   A shortened statutory period for reply to this action is set to expire THREE (3) months from the mailing date of this communication. See 37 CFR 1.134.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quang N. Nguyen whose telephone number is (571) 272-3886.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's SPE, Rupal Dharia, can be reached at (571) 272-3880. The fax phone number for the organization is (571) 273-8300.

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Quang N. Nguyen
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AU – 2141